

### § 572.43

(LLR or RLR) not less than 37 g's and not more than 46 g's.

(3) For the lower thoracic spine (T12) not less than 15 g's and not more than 22 g's.

(b) Test Procedure. (1) Adjust the dummy legs as specified in § 572.44(f). Seat the dummy on a seating surface as specified in § 572.44(h) with the limbs extended horizontally forward.

(2) Place the longitudinal centerline of the test probe at the lateral side of the chest at the intersection of the centerlines of the third rib and the Rib Bar on the desired side of impact. This is the left side if the dummy is to be used on the driver's side of the vehicle and the right side if the dummy is to be used on the passenger side of the vehicle. The probe's centerline is perpendicular to thorax's midsagittal plane.

(3) Align the test probe so that its longitudinal centerline coincides with the line formed by the intersection of the transverse and frontal planes perpendicular to the chest's midsagittal plane passing through the designated impact point.

(4) Position the dummy as specified in § 572.44(h), so that the thorax's midsagittal plane and tangential plane to the Hinge Mounting Block (Drawing SID-034) are vertical.

(5) Impact the thorax with the test probe so that at the moment of impact at the designated impact point, the probe's longitudinal centerline falls within 2 degrees of a horizontal line perpendicular to the dummy's midsagittal plane and passing through the designated impact point.

(6) Guide the probe during impact so that it moves with no significant lateral, vertical or rotational movement.

(7) Allow a time period of at least 20 minutes between successive tests of the chest.

[59 FR 52091, Oct. 14, 1994, as amended at 59 FR 52091, Oct. 14, 1994]

### § 572.43 Lumbar spine and pelvis.

(a) When the pelvis of a fully assembled dummy (SA-SID-M001A revision B, dated September 12, 1996, (incorporated by reference; see § 572.40) is impacted laterally by a test probe conforming to § 572.44(a) at 14 fps in accordance with paragraph (b) of this section, the peak acceleration at the loca-

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tion of the accelerometer mounted in the pelvis cavity in accordance with § 572.44(c) shall be not less than 40g and not more than 60g. The acceleration-time curve for the test shall be unimodal and shall lie at or above the +20g level for an interval not less than 3 milliseconds and not more than 7 milliseconds.

(b) Test Procedure. (1) Adjust the dummy legs as specified in § 572.44(f). Seat the dummy on a seating surface as specified in § 572.44(h) with the limbs extended horizontally forward.

(2) Place the longitudinal centerline of the test probe at the lateral side of the pelvis at a point 3.9 inches vertical from the seating surface and 4.8 inches ventral to a transverse vertical plane which is tangent to the back of the dummy's buttocks.

(3) Align the test probe so that at impact its longitudinal centerline coincides with the line formed by intersection of the horizontal and vertical planes perpendicular to the midsagittal plane passing through the designated impact point.

(4) Adjust the dummy so that its midsagittal plane is vertical and the rear surfaces of the thorax and buttocks are tangent to a transverse vertical plane.

(5) Impact the pelvis with the test probe so that at the moment of impact the probe's longitudinal centerline falls within 2 degrees of the line specified in paragraph (b)(3) of this section.

(6) Guide the test probe during impact so that it moves with no significant lateral, vertical or rotational movement.

(7) Allow a time period of at least 2 hours between successive tests of the pelvis.

[55 FR 45766, Oct. 30, 1990, as amended at 59 FR 52091, Oct. 14, 1994; 63 FR 16140, Apr. 2, 1998]

### § 572.44 Instrumentation and test conditions.

(a) The test probe used for lateral thoracic and pelvis impact tests is a 6 inch diameter cylinder that weighs 51.5 pounds including instrumentation. Its impacting end has a flat right angle face that is rigid and has an edge radius of 0.5 inches.

(b) Three accelerometers are mounted in the thorax for measurement of lateral accelerations with each accelerometer's sensitive axis aligned to be closely perpendicular to the thorax's midsagittal plane. The accelerometers are mounted in the following locations:

(1) One accelerometer is mounted on the thorax to lumbar adaptor (SID-005 revision F, dated May 18, 1994, incorporated by reference; see § 572.40) with seismic mass center located 0.5 inches toward the impact side, 0.1 inches upward and 1.86 inches rearward from the reference point shown in Figure 30 in appendix A to subpart F of part 572. Maximum permissible variation of the seismic location must not exceed 0.2 inches spherical radius.

(2) Two accelerometers are mounted, one on the top and the other at the bottom part of the Rib Bar (SID-024) on the struck side. Their seismic mass centers are at any distance up to .4 inches from a point on the Rib Bar surface located on its longitudinal center line .75 inches from the top for the top accelerometer and .75 inches from the bottom, for the bottom accelerometer.

(c) One accelerometer is mounted in the pelvis for measurement of the lateral acceleration with its sensitive axis perpendicular to the pelvic midsagittal plane. The accelerometer is mounted on the rear wall of the instrumentation cavity of the pelvis (SID-087 revision H, dated May 18, 1994, incorporated by reference; see § 572.40). The accelerometer's seismic mass with respect to the mounting bolt center line is 0.9 inches up, 0.7 inches to the left for left side impact and 0.03 inches to the left for right side impact, and 0.5 inches rearward from the rear wall mounting surface as shown in Figure 31 in appendix A to subpart F of part 572. Maximum permissible variation of the seismic location must not exceed 0.2 inches spherical radius.

(d) Instrumentation and sensors used must conform to the SAE J-211 (1980) recommended practice requirements (incorporated by reference; see § 572.40). The outputs of the accelerometers installed in the dummy are then processed with the software for the Finite Impulse Response (FIR) filter (FIR 100 software). The FORTRAN program for

this FIR 100 software (FIR100 Filter Program, Version 1.0, July 16, 1990) is incorporated by reference in this part (see § 572.40). The data are processed in the following manner:

(1) Analog data recorded in accordance with SAE J-211 (1980) recommended practice channel class 1000 specification.

(2) Filter the data with a 300 Hz, SAE Class 180 filter;

(3) Subsample the data to a 1600 Hz sampling rate;

(4) Remove the bias from the subsampled data, and

(5) Filter the data with the FIR100 Filter Program (Version 1.0, July 16, 1990), which has the following characteristics—

(i) Passband frequency, 100 Hz.

(ii) Stopband frequency, 189 Hz.

(iii) Stopband gain, -50 db.

(iv) Passband ripple, 0.0225 db.

(e) The mountings for the spine, rib and pelvis accelerometers shall have no resonance frequency within a range of 3 times the frequency range of the applicable channel class.

(f) Limb joints of the test dummy are set at the force between 1-2 g's, which just supports the limbs' weight when the limbs are extended horizontally forward. The force required to move a limb segment does not exceed 2 g's throughout the range of limb motion.

(g) Performance tests are conducted at any temperature from 66 °F to 78 °F and at any relative humidity from 10 percent to 70 percent after exposure of the dummy to these conditions for a period of not less than 4 hours.

(h) For the performance of tests specified in §§ 572.42 and 572.43, the dummy is positioned as follows:

(1) The dummy is placed on a flat, rigid, clean, dry, horizontal smooth aluminum surface whose length and width dimensions are not less than 16 inches, so that the dummy's midsagittal plane is vertical and centered on the test surface. The dummy's torso is positioned to meet the requirements of § 572.42 and § 572.43. The seating surface is without the back support and the test dummy is positioned so that the dummy's midsagittal plane is vertical and centered on the seat surface.

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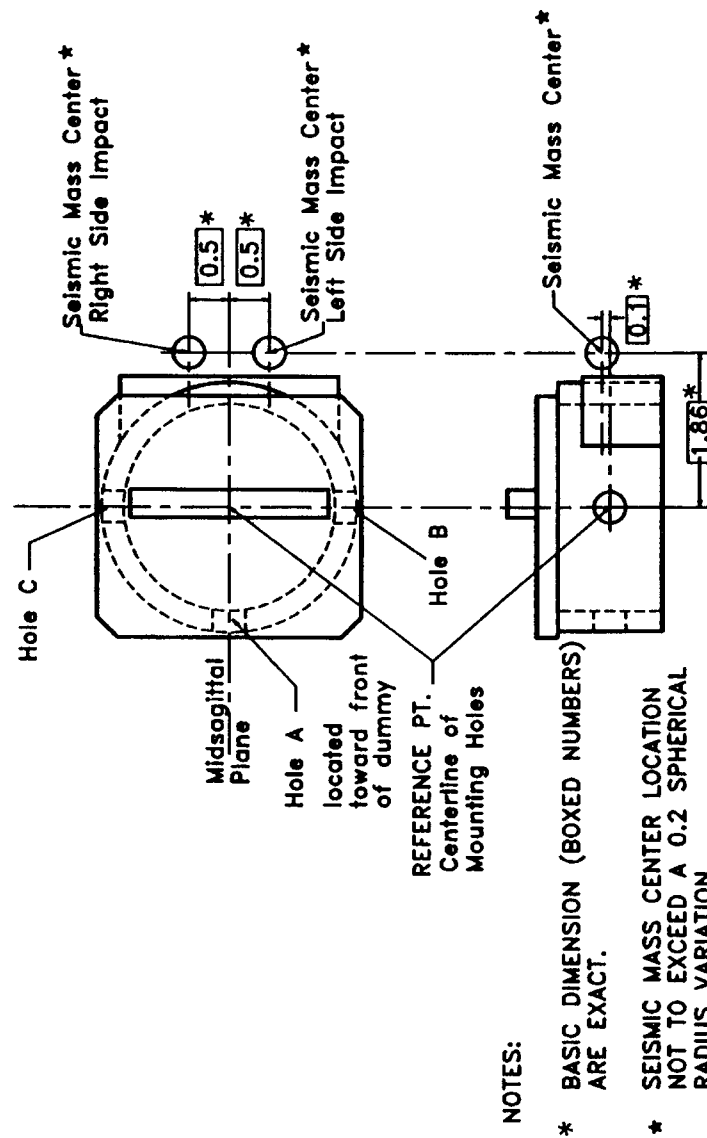
(2) The legs are positioned so that their centerlines are in planes parallel to the midsagittal plane.

(3) Performance pre-tests of the assembled dummy are separated in time by a period of not less than 20 minutes unless otherwise specified.

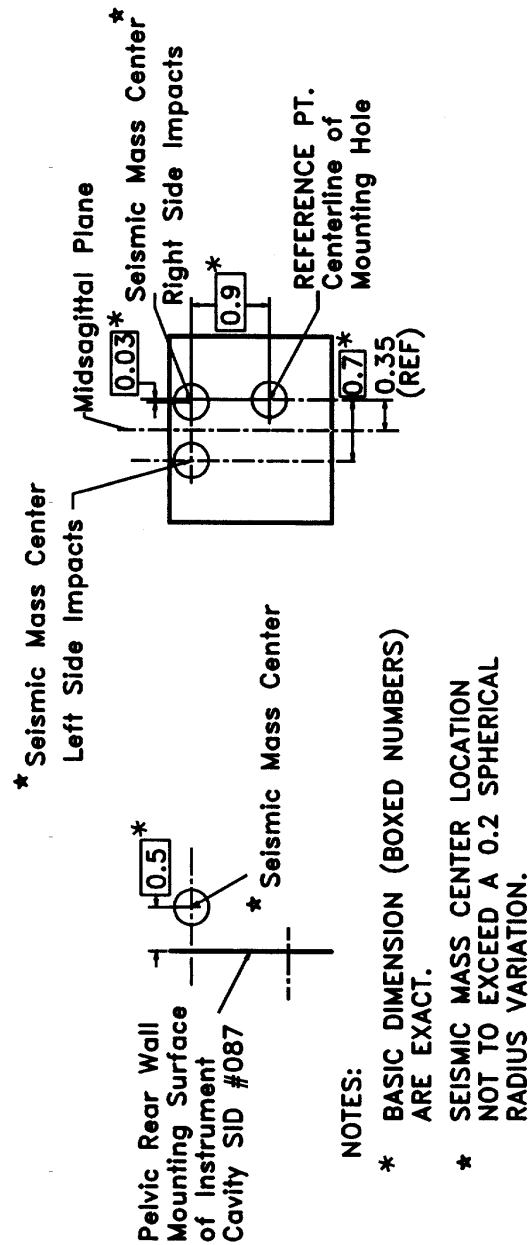
(4) Surfaces of the dummy components are not painted except as specified in this part or in drawings subtended by this part.

[55 FR 45766, Oct. 30, 1990, as amended at 56 FR 47011, Sept. 17, 1991; 59 FR 52091, Oct. 14, 1994]

APPENDIX A TO SUBPART F OF PART 572—FIGURES



Accelerometer Seismic Mass Location on Assembly SID #005  
FIGURE 30



Pelvis Accelerometer Seismic Mass Location

FIGURE 31

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[59 FR 52092, Oct. 14, 1994]

**Subparts G–H [Reserved]**

**Subpart I—6-Year-Old Child**

SOURCE: 56 FR 57836, Nov. 14, 1991, unless otherwise noted.

**§ 572.70 Incorporation by reference.**

(a) The drawings and specifications referred to in §§ 572.71(a) and 572.71(b) are hereby incorporated in subpart I by reference. These materials are thereby made part of this regulation. The Director of the Federal Register approved the materials incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the materials may be inspected at NHTSA's Docket Section, 400 Seventh Street, SW., room 5109, Washington, DC, or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(b) The incorporated material is available as follows:

(1) Drawing number SA 106 C001 sheets 1 through 18, and the drawings listed in the parts lists described on sheets 8 through 17, are available from Reprographic Technologies, 9000 Virginia Manor Rd., Beltsville, MD 20705,

Telephone (301) 210-5600, Fax (301) 210-5607.

(2) A User's Manual entitled, "Six-Year-Old Size Child Test Dummy SA106C," October 28, 1991, is available from Reprographic Technologies at the address in paragraph (b)(1) of this section.

(3) SAE Recommended Practice J211, Instrumentation for Impact Test, June 1988, is available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.

[56 FR 57836, Nov. 14, 1991, as amended at 62 FR 44226, Aug. 20, 1997]

**§ 572.71 General description.**

(a) The representative 6-year-old dummy consists of a drawings and specifications package that contains the following materials:

(1) Technical drawings, specifications, and the parts list package shown in SA 106C 001, sheets 1 through 18, re-released July 11, 1997;

(2) A user's manual entitled, "Six-Year-Old Size Child Test Dummy SA106C," October 28, 1991.

(b) The dummy is made up of the component assemblies set out in Table A:

TABLE A

Assembly drawing No.	Drawing title	Listed on drawing No.	Revision
SA 106C 010 .....	Head Assembly .....	SA 106C 001, sheet 8 .....	A
SA 106C 020 .....	Neck Assembly .....	SA 106C 001, sheet 9 .....	A
SA 106C 030 .....	Thorax Assembly .....	SA 106C 001, sheet 10 .....	C
SA 106C 030 .....	Thorax Assembly .....	SA 106C 001, sheet 11 .....	D
SA 106C 041 .....	Arm Assembly (right) .....	SA 106C 001, sheet 14 .....	A
SA 106C 042 .....	Arm Assembly (left) .....	SA 106C 001, sheet 15 .....	A
SA 106C 050 .....	Lumbar Spine Assembly .....	SA 106C 001, sheet 12 .....	A
SA 106C 060 .....	Pelvis Assembly .....	SA 106C 001, sheet 13 .....	A
SA 106C 071 .....	Leg Assembly (right) .....	SA 106C 001, sheet 16 .....	A
SA 106C 072 .....	Leg Assembly (left) .....	SA 106C 001, sheet 17 .....	A

(c) Adjacent segments are joined in a manner such that except for contacts existing under static conditions, there is no contact between metallic elements throughout the range of motion or under simulated crash-impact conditions.

(d) The structural properties of the dummy are such that the dummy conforms to this part in every respect both before and after its use in any test

similar to those specified in Standard 213, Child Restraint Systems.

[56 FR 57836, Nov. 14, 1991, as amended at 62 FR 44226, Aug. 20, 1997]

**§ 572.72 Head assembly and test procedure.**

(a) *Head assembly.* The head consists of the assembly designated as SA 106 010 on drawing No. SA 106C 001, sheet 2,